

## **Community Computer K-Yan for Interactive Group Learning: A case study from India**

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In 2007 India embarked on one of the world's most ambitious initiatives for human empowerment through its Common Service Centre programme, by aiming to create an ICT infrastructure for education, e-governance and employment generation in 100,000 Indian villages. An outgrowth of the 'Mission 2007: Every Village a Knowledge Centre' programme of MS Swaminathan Research Foundation, Chennai; the public-private partnership initiative had many challenges on a scale without precedence anywhere. The design task was to develop a nationwide, self-running, self-evolving, and self-expanding system with a common purpose of bringing rural prosperity through knowledge. The orientation was pro-poor, pro-women, pro-nature, and on sustainable technology development and dissemination to remove the social inequities.

It is generally agreed that ICT has the potential to overcome the problems of remoteness, reach, connectivity, and content dissemination. The challenges of knowledge infrastructure development are different from the challenges of physical infrastructure development, because of the different properties of knowledge, and the way it expands and spreads. It was recognized that a different approach and methodology will have to be evolved to truly benefit from the knowledge value revolution.

To adequately plan for a knowledge infrastructure, it is necessary to define knowledge needs, and then plan and design activities and technology enablers for those needs. Knowledge needs are less dependent on fixed physical infrastructure, and there are many ways of meeting them, with new possibilities constantly emerging. The knowledge needs of rural users were categorized in four kinds: 1. Information needs, such as dynamic data needs like weather data, or market price data for commodities and agricultural produce; 2. Know-how needs, such as techniques and skills for various vocations and employment generation enterprises; 3. Education and training needs – from school education to capacity building for training of trainers; and 4. Networking and sharing needs for local knowledge networks.

One of the consideration in planning was the rapid pace of developments in ICT, with constant emergence of newer and better technologies, with reduced physical form factor, better performance and lower price. This phenomenon of rapid obsolescence led to conscious avoiding of heavy expenditure on fixed physical infrastructure components; and focusing on creating enabling environments rather than fixed physical solutions. The diversity of needs suggested various preferred platforms for various requirements: mobile devices and applications for dynamic data requirements,

and location-specific information needs; self-sufficient stand-alone multi-lingual information kiosks for know-how and technical information needs; specially developed community computers for education and training needs for group learning; and various information sharing platforms for networking and sharing needs.

A product called Community Computer was developed at IIT Bombay in 2004, as an enabling device for multimedia-content delivery and interactive group learning vehicle. Named K-Yan (K=Knowledge, Yan=Vehicle), the product was conceived as an integrated, portable multi-media product for e-content delivery in classrooms and group learning environments at all levels. K-Yan integrated a full-feature multi-media computer with internet connectivity, with a data projector, TV tuner, audio system, and DVD player in a single, easy-to-use portable product, with an ultra-large display enabling large audiences to share the projected content.

The modular construction of K-Yan, and the set up of accessories which can be attached to it, allow it to be customized for many different classroom situations and use contexts. K-Yan as a stand-alone device is sufficient to create a portable classroom anywhere, if a wall to project content is available. A folding self-standing screen allows K-Yan to be used in open fields and grounds. Power from inverters, car-batteries, and solar power can be used in situations where there is no power. The built-in hard disk can be used to store large amount of data within K-Yan itself, besides the ability to import and view content from CDs / VCDs / DVDs and USB drives. Built-in internet connectivity and the built-in TV tuner gives free access to all the content on the web and to broadcast content (terrestrial and DTH) anywhere. K-Yan can also be installed in buses and vans with both rear and front projection possibility to create classrooms on wheels. K-Yan can also be used as a server allowing many thin-client terminals to be supported by it, giving a very economic solution for creating a computer lab.





Besides being deployed all over India in large numbers in schools and colleges, both government and private, many new applications of K-Yan have emerged such as in employability and skills training, corporate training, seminars, and presentations, rural agricultural and health awareness programmes, and for education at all levels from early childhood learning to school, college, and professional and technical education.

K-Yan has also become a key-enabling device to support the concept of portable classrooms, which essentially consists of being able to create a rich learning environment anywhere, for learning any subject, for learners of all ages. Such learning environments do not depend on a fixed physical location, and on dedicated school buildings to conduct classes. By taking the classroom to the potential learners, many more people would join organized learning endeavours to upgrade themselves, by not having to travel long distances to join a class being run in a school at a fixed time, and opens up the possibility of learning in the evenings or in the night as convenient. The concept of the Portable classroom has often been talked about before, under names such as the 'Classroom at the Doorstep', or 'Classrooms on Wheels', however, with the availability of products such as the community computer K-Yan it is now possible to create highly media rich interactive learning environments everywhere, very quickly.

An ICT based, optimized, integrated rich learning environment such as that enabled by K-Yan provides dynamic, interactive multimedia content delivery for collaborative group learning; large format audio and video conferencing for multi-location interaction; recording and documentation of learning sessions, and continuous assessment of individual learning; providing a very cost-effective solution to ensure quality learning for all.

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